Department of Chemical Engineering
Presents:

HAJIM SCHOOL OF ENGINEERING & APPLIED SCIENCES
UNIVERSITY of ROCHESTER

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Fabrication and Characterization of Surface-Tethered (Bio)Macromolecular Nanostructures

Wednesday, December 7, 2011
2:15 p.m.
101 Goergen Hall

We show that stimulus-responsive polymer brushes and surface-grafted biomacromolecules offer exciting possibilities for sensing and actuation applications because they provide a means to amplify changes in the solvent environment (such as changes in pH, temperature, ionic strength) by a change in their molecular conformation. We discuss surface-initiated, enzymatic polymerization (SIEP) of DNA to synthesize high molecular weight DNA nanostructures *in situ*, while incorporating a broad range of unnatural nucleotides in the polymerized DNA. These nanostructures are used in the development of a novel and versatile detection and amplification platform technology that is applicable to a broad range of on-chip sensors, heterogeneous immunoassays, protein and DNA microarrays. Furthermore, we show innovative ways for nano- and micropatterning polymer brushes by electric field induced nanolithography and through manipulation of the µCP process.